



# PIVOT EM

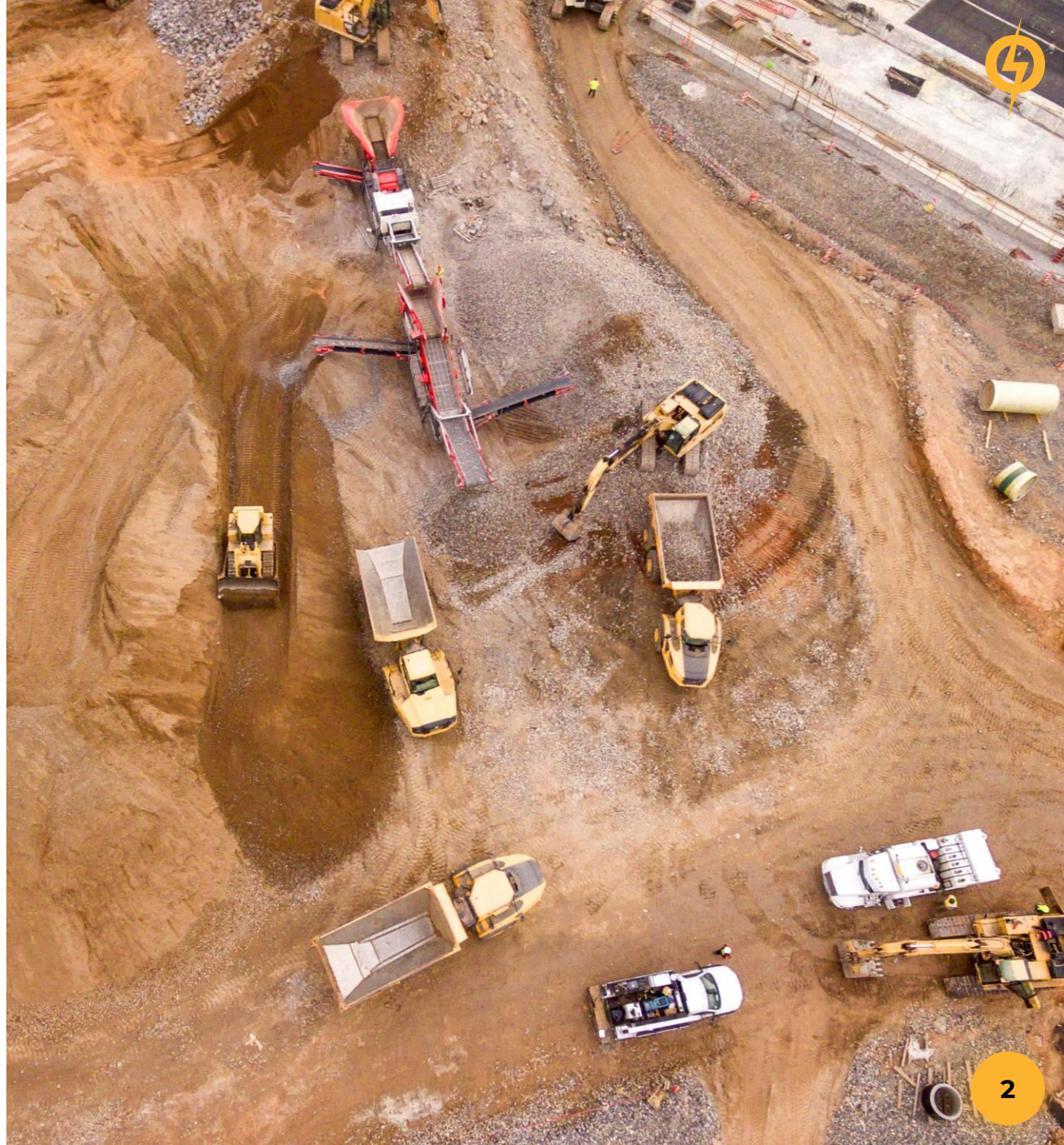
April 2024

# PIVOT EM

**LEAD THE ELECTRIFICATION OF EXISTING MINING AND CONSTRUCTION FLEETS**

**DESIGN AND BUILD NEXT GENERATION BATTERY ELECTRIC EQUIPMENT.**

Existing heavy equipment makers are not delivering effective solutions for existing fleets; their focus is on new equipment sales using GHG emitting, legacy diesel engine technology.





# PIVOT ELECTRIC MACHINES



Pivot Electric Machines Corp builds and retrofits existing heavy equipment with economically viable and operationally effective "next generation" battery systems.



Dedicated to transforming the mining and construction industries into carbon neutral businesses.



Bringing together a well-respected team of BEV designers and builders with experience in delivering gear box design and production, unit control systems, battery management & design



Integrating battery parts and drive systems from well respected international suppliers





# KEY TEAM



**Michael Collins**  
FOUNDER, PRESIDENT,  
CEO & DIRECTOR

Successful entrepreneur with a vision of what mining and construction should be in the future. Experience in both exploration for and development of mining projects. Focusing now on carbon neutral mining and construction business and uranium exploration and mining.



**William Hughes**  
CHIEF ENGINEER

Leading projects in the mining and energy industry with experience on the owner's, engineer's and constructor's team. Key member of the Rokion Team. Leading builds of up to \$400 million. Independent, calm, and skilled leader able to manage high performance teams



**Jessica Van Den Akker**  
CPA, VP FINANCE

Ms. Van Den Akker is a Chartered Professional Account (CA) with 15 years' experience in the resource sector. She is currently the COF of Kore Mining. She gained extensive experience through a Canadian audit firm providing reporting and accoutering assurance a services to publicly traded companies, primarily in natural resources.



**Alvin Pyke**  
SENIOR  
ADVISOR-EDMONTON

With an engineering background and a graduate of the institute of Corporate Directors DEP program., Mr. Pyke is has built and developed companies specializing in process automation, predictive machinery analysis and other process data analytics, Rally Engineering Ltd, a full service engineering firm, and Helical Pier Systems Ltd, a Civil EPCM



**Prairie Machine/Rokion**  
CO-FOUNDING SHAREHOLDER AND PRIME CONTRACTOR

Prairie Machine is a global leader in the manufacturing and supply of heavy-duty equipment and technical solutions for the heavy industrial and mining industries. Under the Rokion brand, Prairie Machine supplies industrial-strength, zero emission battery powered crew and utility trucks for use in surface and underground mining operations. Prairie Machine mechanical and electrical divisions provide complete service, training, and support for mine sites worldwide.



# STATUS QUO



## FOUNDATIONS OF A GREEN REVOLUTION

Mining and construction industries are building the foundation for the green revolution, but they are not green themselves.



## ENTRENCHED INTERESTS IN BATTERY TECH

Existing manufacturers are invested in existing Li Ion/LiFePO<sub>4</sub> battery technology.



## ENERGY GAPS IN BATTERY TECH

High energy demands exceed capacity of current battery energy density and charging capabilities, so existing battery electric equipment is not competitive, except in extreme conditions.



## OEM PRIORITIES: SALES OVER CONVERSION

Major OEMs focus on new equipment sales, and do not prioritize need for existing fleet conversion from diesel engines to battery power and underestimate the market for competitive equipment in the mining and construction business.



Miners are racing to reduce carbon emissions to maintain social license.

# ELECTRIC EQUIPMENT PARADOX

*Production of Lithium batteries is an inherently carbon intensive industry and mining is a key component of producing battery metals*

- Existing battery technology is not efficient, robust or safe enough to effectively replace diesel engines that gobble up diesel at 4 liters/minute.
- Next generation batteries and chargers will provide a fast charging, robust, safe and economic solution.
- Mobile equipment accounts for 40-60% of carbon emissions in open mines.



# OUR FOCUS

**The Retrofit or Remanufacturing market for Surface mining equipment is valued at approximately \$200B**

Existing manufactures are focused on old battery technology or Hydrogen which is also a greenhouse gas.

## Total Addressable Market

\$170b & \$30b, Retrofit Surface and Underground Equipment

\$19b & \$2b/year, New Surface and Underground Equipment

Driving carbon emission reduction in industries that are critical to the development of a **Net Carbon Neutral world.**

## NEAR TERM OBJECTIVES:

- Deliver remanufactured haul trucks that are more efficient and cost effective than existing diesel equivalents
- First product: CAT 793 BEV conversion kits
- Second Product: Cat 797 BEV conversion kits.
- With over 56,000 diesel trucks over 90t\*, continue to expanding conversion kits into other high volume business.

*\*Parker Bay Mining survey 2022*

## LONG TERM VISION:

- Become the preferred partner for the mining and construction industry to help eliminate carbon costs and improve mining economics.
- With responsive and innovative design, dominate the market in high volume categories with clean sheet designs that out- perform the incumbent equipment makers.



# THE PIVOT DIFFERENCE



With optimized design, LTO and solid-state batteries, Pivot heavy mobile equipment will be **more efficient, productive, and cost effective** than current battery or diesel-powered equipment.

***Pivot is the first company to design and build solid state battery powered heavy equipment.***

- Utilizing Pivot designed and patentable\* LTO battery technology and charging equipment to effectively operate heavy mining equipment.
- Key shareholder and contractor Prairie Machine has over **40 years of experience** building heavy mining equipment and light battery electric mining equipment.  
<https://www.youtube.com/watch?v=aPgKihSiLRs>
- Designing and building battery electric conversion systems for high volume diesel powered heavy equipment. Starting with the **CAT 793** and progressing to **CAT 797** and **CAT 777** diesel-mechanical trucks
- Pivot is focused on building a truck power system that is economically and effectively better than the original diesel truck. Fitting **seamlessly integrated into existing equipment fleets and operating procedures.**

*\*Pivot has filed a provisional patent on battery design related to charging cycle, charging strategy, cooling and battery management*





# LITHIUM TITANATE BATTERIES

*Lithium titanate battery chemistry delivers unique opportunities to mining operations*



- Lithium titanate batteries are known for cycle lives far exceeding current NMC or LPO batteries, proprietary duty cycle management and battery management system technology can extend this to in excess of four times competing battery technologies.
- Lithium titanate batteries are more temperature resilient with an operating range from -25 to 60 C°
- While the long life of the cells reduces overall capital expenses on a high usage equipment fleet, the durability and long life also significantly impact maintenance costs and maintenance down time.
- Pivot lithium titanate battery modules have a significantly reduced fire hazard compared with existing NMC and LPO battery modules because of lower cell resistance and proprietary battery management and cooling systems.



# FIRST DESIGN

*231t Caterpillar 793, Surface Haul Truck*



- 764 kW Lithium Titanate proprietary battery power system
- 6.5 minute static charge cycle, Dynamic charging optional
- Long life components and high operational utilization delivers positive economic business case





# THE OPPORTUNITY



Mining and construction companies are under pressure to retrofit existing fleets and go green in new fleet purchases



LTO and Solid State batteries are the pivot that the mining and construction industry needs to move forward to a carbon neutral future



Initial focus on Remanufacturing market which is worth > \$100b to Pivot And a long term recurring heavy equipment market of \$20b/y



Existing Equipment manufacturers are tied to dead end battery technology



Existing manufacturers ignoring BEV retrofitting to focus on new sales



Long term, selling Pivot EM OEM heavy equipment, through relationships with remanufactured equipment customers



# THE COMPETITION

*There are three relevant competitors in the market*



Williams Advanced Engineering in Australia have designed trucks that can only drive loads downhill. (the battery system was delivered 12 months ago but there is no word on operation) ;



First Mode in Seattle have problems with batteries that overheat in their hydrogen hybrid model have announced a full battery electric truck but no word on testing or deployment;



Caterpillar is promising to market a battery electric 793F in 5 to 10 years. **BUT** they will only be converting diesel electric “F” models which are a small fraction of existing fleets.





# INDUSTRY DEMAND

## Fortescue Metals

**"It was time to go green."**

As the sun set over the hills of the first mine that set him [Andrew Forrest] on a path to enormous wealth, he explained that Fortescue, the Australian company he founded, would no longer just extract and ship 180 million tons of iron ore, the raw material for steel. It would zero out its own carbon emissions and become a renewable energy powerhouse. **...50% of green house gas emissions are from it's heavy equipment fleet.\***

\*From the New York Times 20211017

Fortescue has committed to upgrading heavy equipment to hydrogen fuel by 2030.

**While cleaner than diesel, hydrogen requires significantly more complicated infrastructure than does electricity. Hydrogen will not be a viable solution to mining operations**

## Freeport-McMoRan

Freeport, has roughly 600 haul vehicles ... To energize these machines, Freeport purchases **180 million gallons of diesel** a year.

The mining business is grappling with its paradoxical position as provider of copper, lithium and different battery metals whilst operations contribute to world warming.

"We have to make investments to reduce carbon emissions," CEO Adkerson said in the interview released Dec 1, 2021. "We're going to do that. It's going to cost some money." Akerson continues, **"it was 'absolutely necessary' for Freeport to curtail emissions.\*"**

\* From Reuters Next conference Dec. 1, 2021

**Mining companies must move away from diesel to green power but current technology/manufactures are not providing the solutions**



# CONTRACT NEGOTIATIONS

- International mining company with large scale open pit mines
- BEV conversion of 2 to 5 - 231 tonne Caterpillar Haul trucks with Pivot LTO battery modules and charging system
- Initial contract value **\$25m**, USD 25 more trucks in fleet
- Low capex builds/high margin
- Discussing opportunities with two additional international miners with very large Caterpillar truck 793 fleets
- Starting discussions on Caterpillar 797 trucks, (400t payload)





# CONTRACT NEGOTIATIONS



## CAT 793

Talking with 2 multi-national mining companies about their CAT 793 (231t) truck fleets in North and South America



## CAT 797

Initiating talk with Canadian users of "Ultra class" CAT 797 (400t) trucks



## CAT 777

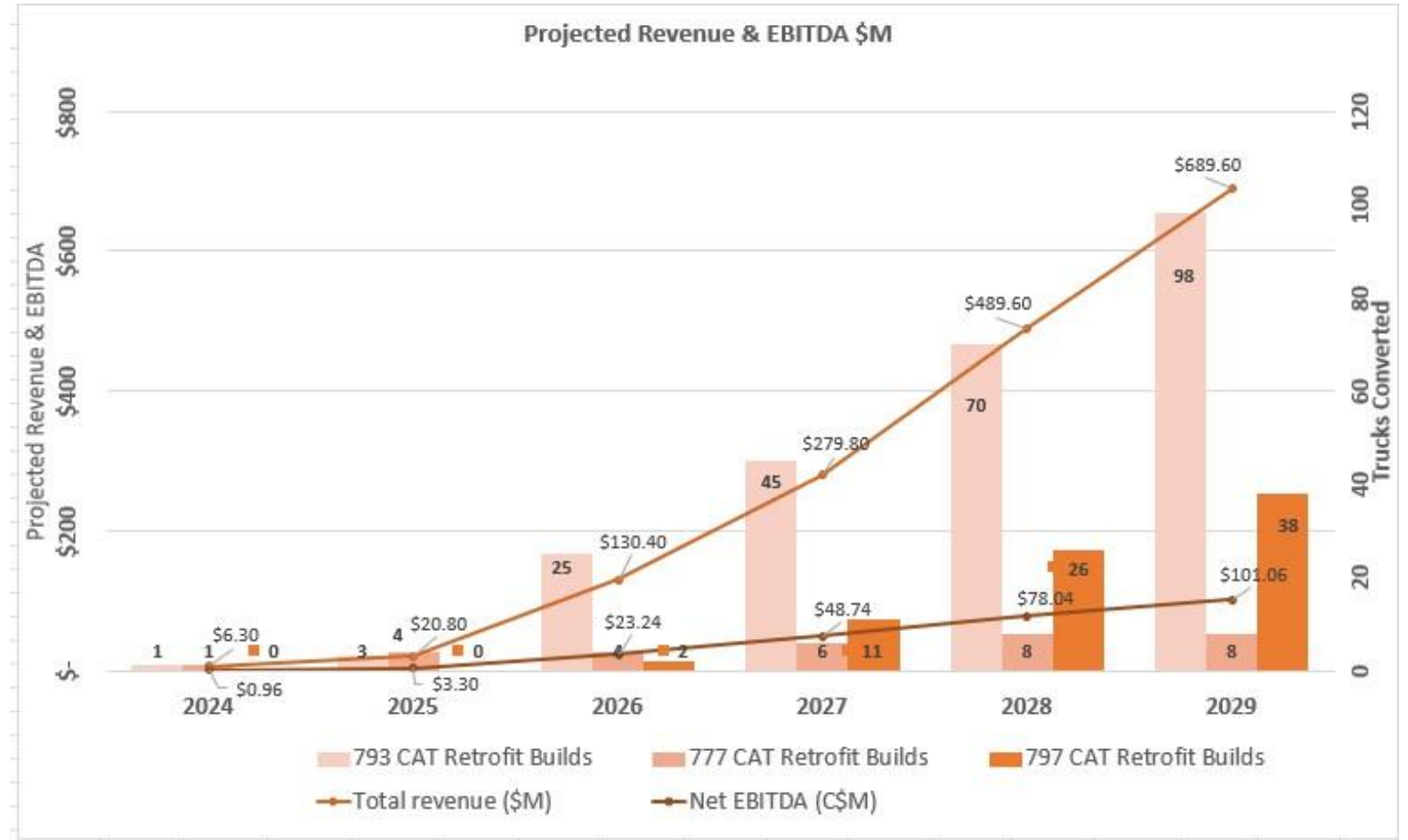
Working on an economic business case for CAT 777 (100t) trucks requested by a Canadian fleet operator.



# PROJECTED REVENUE & EBITDA

- Projection encompasses a fraction of total market of ~56,000 trucks over 100 tonnes capacity.
- Payback on initial engineering on new designs is under 2 years.
- Development process and production scaling has low capital intensity.

*\*number of trucks converted and related revenue and EBITDA are estimated many not be representative of final sales.*

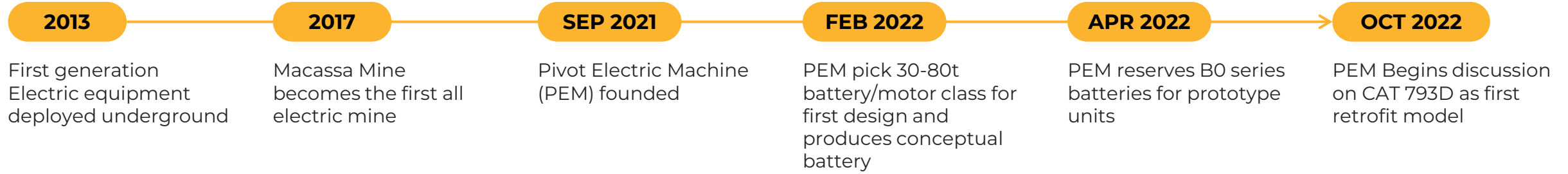






# EXECUTION TIMELINE

## BEV Equipment evolution to date



## The Future

### Phase 1

**Q1 2024**

Sign contract on CAT 793D retrofit truck

**Q3 2024**

Build first commercial CAT 793D retrofit with Lithium Titanate cells

### Phase 2

**Q1 2025**

Start production of CAT 793D retrofit battery power systems (BPS)

**Q2 2025**

Development of Edmonton BPS manufacturing facility and export to Brazil

### Phase 3

**Q3 2025**

Expanded delivery of CAT 793D BPS trucks, commercialization of CAT 797 and CAT 777 BPS conversions

**Q2 2026**

Scale up surface truck BPS program and begin expansion to underground trucks using the same technology.

**Q1 2027**

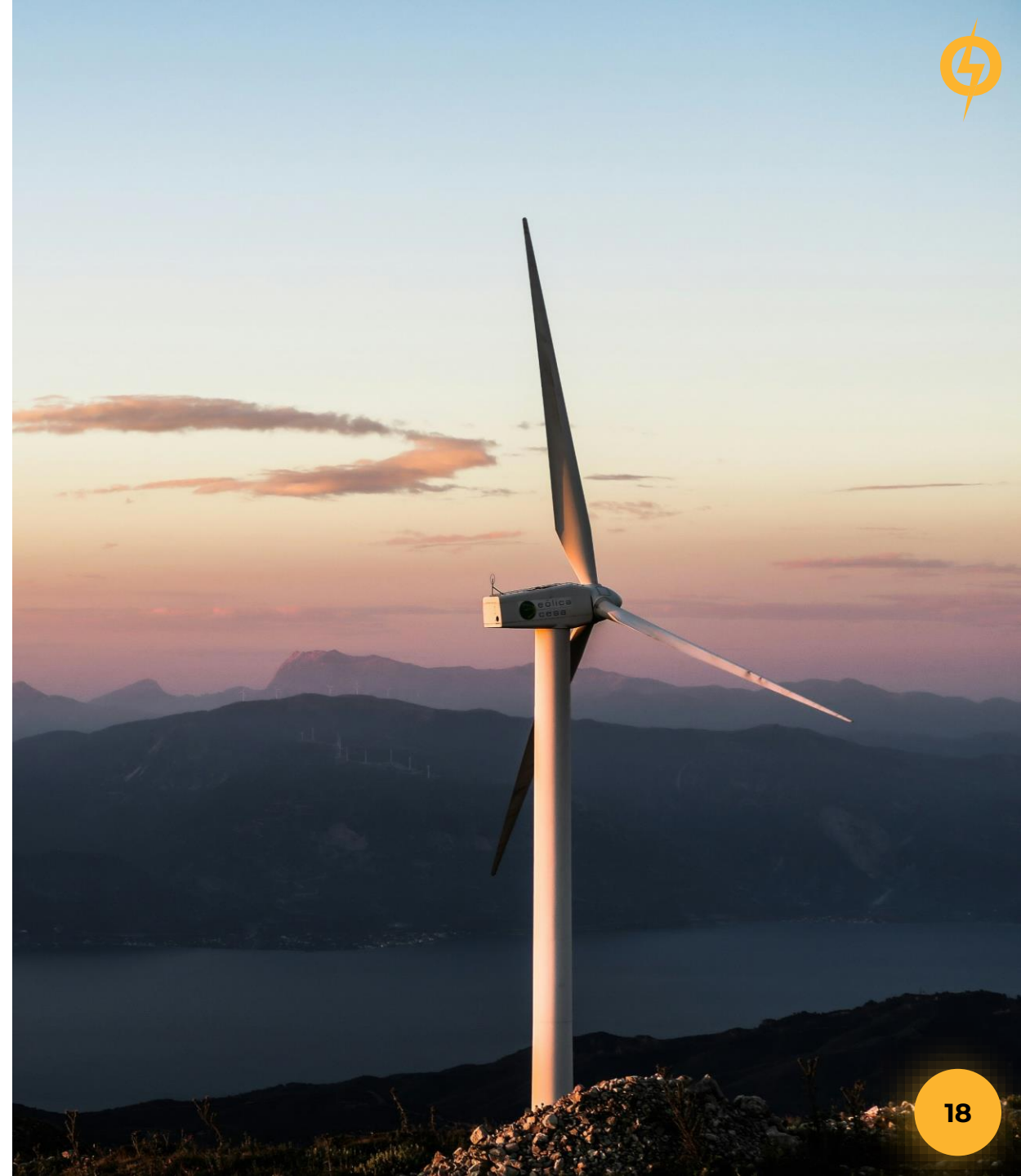
Expand product line to additional equipment classes as clients require



# OPTIMIZATION

## *Additional programs to maintain the Pivot Advantage*

- Pivot AI lab, working with client fleets to optimize operational availability and performance uses geo-located performance data to adapt and optimize truck operations in real time to changing road conditions and mine requirements to reduce accidents, help maintain consistent operations in bad weather.
- Working on a Lithium Titanate Battery model that has four times the life cycle characteristics of more common NMC battery cells. This allows us to make a more durable and cost effective battery with more effective operating time.
- Expansion into additional lines of heavy haul trucks.
- Application of our proprietary battery technology to other aspects of mining as well as off road heavy transport sectors through direct development as well as licensing with select industry partners. Provisional patents have been filed.



# PARTNERS

*With 40 years of experience building mining equipment and 10 years of building Light Electric Underground Trucks*

*Prime contractor to Pivot, building the next generation of electric heavy trucks & loaders*

**PRAIRIE  
MACHINE**

**ROKION**





# PIVOT ADVANTAGE



Deep industry knowledge



Capable of rapid expansion of design and manufacturing team



Track record of design and build of electric equipment



Working relationships with mining companies





# PIVOT EM

For further information please contact:  
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+1 (778) 819-2477  
[mcollins@pivotemcorp.com](mailto:mcollins@pivotemcorp.com)

April 2024

# CAPITAL STRUCTURE

**10.3M**

Shares  
Outstanding

**12.15M**

Fully Diluted

**1.3M at \$1.00**

Warrants

**550,000**

at \$0.045 avg cost  
Options

# MAJOR SHAREHOLDERS

**32%\***

Michael Collins

**22%\***

Prairie Machine

**4%\***

William Hughes

**3%\***

Monty Sutton

\*Multiple voting  
founders shares





# FORWARD LOOKING STATEMENT

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# OTHER KEY ADVISORS



**Kipp Sakundiak**  
Director

An early innovator in the Light Electric Equipment space, Kipp is General Manager at Prairie Machine/Rokion expanding business lines year on year. A depth of history of working in the mining & metals industry. Skilled in Negotiation, Procurement, Engineering, Strategic Planning, and Business Development. Strong sales professional with a B.Eng. focused in Agricultural Engineering from University of Saskatchewan.



**Monty Sutton**  
CFO & Director

Monty Sutton brings more than 35 years of experience in public markets, corporate governance, senior administration and accounting and has served on the management teams and boards for many private and publicly traded companies. Starting on the trade floor of the Vancouver Stock Exchange in 1987, Mr. Sutton has also held positions as Senior Management Accountant for MacMillan Bloedel, Investment Advisor, Insurance Specialist, Corporate Development Manager and most recently Chief Financial Officer.



**Christopher Huggins**  
VP MARKETING

With a decade of successful heavy equipment sales, Chris brings a deep understanding of the capital and productivity requirements of large and medium sized operations, and saw early on the opportunity battery equipment can bring, dynamically frame issue around financing and marketing equipment and batteries through operational availability models and power as a service.



**Dr Chris Burns**  
ADVISOR

Co-founded NOVONIX Battery Technology Solutions, a Nasdaq listed leading battery testing and Synthetic Graphite producer. Dr. Burns holds multiple patents related to Li-ion batteries and is a co-author on peer reviewed journal articles that have been cited over 4,000 times.



**Reg (Rejean) Labelle**  
ADVISOR

Former Director Technology and Innovation at Kirkland Lake Gold, pioneering electric equipment at the Macassa Underground mine and former National Sales & Business Development Manager with Epiroc Canada, a division of Atlas Copco Inc. Reg understands the underground mobile equipment business and has been at the forefront of the electrification of mining.





# CURRENT FEDERAL FUNDING OPPORTUNITIES

## CURRENT FEDERAL FUNDING OPPORTUNITIES

- INNOVATION, SCIENCE & ECONOMIC DEVELOPMENT (ISED) – STRATEGIC INVESTMENT FUND (SIF)
- NATURAL RESOURCES CANADA – CRITICAL MINERALS
- NRC (IRAP)

## PROVINCIAL FUNDING OPPORTUNITIES

- EMISSIONS REDUCTION ALBERTA (ERA)
- ALBERTA INNOVATION
- ENERGY AND MINERALS ALBERTA

## RECENT FEDERAL/PROVINCIAL ANNOUNCEMENTS 2023

Across the battery supply chain – from mining and processing critical minerals, to manufacturing batteries and their components – Canada is attracting job-creating projects from around the world. By making Canada a global leader on batteries, we create middle-class jobs, grow our economy, and keep our air clean for generations to come.

Including private sector money, total investment in the 10 plants for which information is available, is \$37.7 billion. Once they are up and running, the plants are expected to generate thousands of jobs in the EV battery production sector and will have the capacity to manufacture batteries for over two million electric vehicles annually, contributing billions to the country's GDP.